Ingersoll-Rand Company
Montvale, New Jersey

Appendix D

Ecological Investigation Report of the Western Stormwater Retention Basin

Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Text and Attachments

ENSR International
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ECOLOGICAL INVESTIGATION REPORT OF THE WESTERN STORMWATER RETENTION BASIN

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1.0 INTRODUCTION

ENSR has been retained by Ingersoll-Rand Company (IR) to conduct a number of environmental services at the former IR Site located in Phillipsburg, New Jersey (Figure 1). In July 2004, ENSR prepared a Baseline Ecological Evaluation (BEE). After reviewing the BEE, the New Jersey Department of Environmental Protection determined the following: 1) the wetland within the western stormwater retention basin is an environmentally sensitive area (ESA); and 2) a pathway existed between this ESA in the western stormwater basin and surrounding impacted areas. Because a pathway existed between the ESA and the surrounding areas of concern, the NJDEP requested an additional evaluation be conducted regarding the potential for impacts from surrounding areas to affect the ESA within the western stormwater retention basin.

In order to address NJDEP's comments to the July 2004 BEE, ENSR conducted an investigation in February 2005. The purpose of this investigation was to determine if: 1) the wetland that exists within the western stormwater retention basin has been impacted by PAH compounds, metals, and PCBs; and 2) if a migration pathway exists between the western stormwater retention basin and downstream/offsite environmentally sensitive areas. The February 2005 investigation (herein referred to as the "ecological investigation") was also intended to aid in determining if impacts in the stormwater retention basin correspond to depositional/erosional areas within the western stormwater retention basin.

This report serves as a supplement to the BEE dated July 2004 and presents the findings of ENSR's ecological investigation conducted in February 2005. Methods used to conduct the ecological investigation and sediment and surface water sampling are discussed in Section 2. Results are presented in Section 3. Section 4 provides a discussion of the results and ENSR's conclusions based upon the results of the ecological investigation.

1.1 Background Information

The western stormwater retention basin located at the northwestern property boundary (formerly the site of two inverse ponds) has been constructed largely from potentially impacted foundry sand deposited in the area during historic operations; and contains a detention pond which is located on the southwestern side of the basin. The outfall of the detention basin is monitored under a NJPDES permit. In addition, the quality of stormwater from the west side of the facility is monitored here along with the landfill runoff. This area was designed to treat stormwater runoff and operates as a stormwater/wastewater treatment system under the valid NJPDES permit. The swales within the retention basin contain both concrete and geomembrane lined bottoms; the retention basin was created in upland soils. As such, this man-made basin is considered low quality habitat for aquatic life and wildlife.

Stormwater runoff from the western portion of the facility and water discharges from the permitted landfill are mainly channeled into the western stormwater retention basin, which discharges (under NJPDES permit) to the Phillipsburg storm sewer system; the receiving stream from this system is the Delaware River. The retention basin was the site of two former inverse ponds which were used for in-line treatment and discharge of process and stormwater from the western portion of the facility. In the early 1990s when industrial operations in this area of the site ceased, these ponds were excavated and replaced with the current stormwater retention basin which has lined drainage swales. As indicated previously, the western stormwater retention basin was excavated in uplands. The wetland identified within this basin appears to be the result of sediment accumulation located at the lowest elevation in the basin.

The wetland identified within the western stormwater retention basin is a narrow, palustrine, emergent (PEM) wetland, located at the lowest elevation in the western stormwater retention basin. The wetland is dominated by hydrophytic herbaceous species such as purple loosestrife (*Lythrum salicaria*, FACW+) and broad-leaved cattail (*Typha latifolia*, OBL). Subdominants include eastern cottonwood saplings (*Populus deltoids*, FAC) and jewelweed (*Impatiens capensis*, FACW). The wetland is fed by surface runoff from the surrounding area. The predominance of invasive and non-native vegetative species suggests the area has been disturbed in the past. In addition, the predominance of non-native and invasive species reduces the quality of this wetland as habitat for wildlife and aquatic life. Water moves into the western stormwater retention basin from a culvert and then travels through a small ditch which fans out into a wider drainage way, and then feeds into the wetland. Standing water collects at the southern end in a small detention pond which discharges via an inverted discharge structure to the Phillipsburg stormwater sewer system.

2.0 ECOLOGICAL INVESTIGATION METHODOLOGY

2.1 Survey

ENSR completed an ecological investigation at the site on February 9, 2005. The purpose of this investigation was to determine: 1) if the wetland in the western stormwater retention basin has been impacted by on-site contamination; and 2) if there is any pathway for residual constituents to travel from the western stormwater retention basin to off-site ESAs.

To determine if the wetland within the western stormwater retention basin had been impacted, ENSR visually inspected the basin. ENSR conducted the visual inspection to identify areas within the western retention basin where sediment might be expected to accumulate. During this inspection, ENSR also looked for signs of stressed vegetation or other indications that might suggest that the wetland within the basin had been impacted by contaminants present on the site.

In February 2005, ENSR also conducted investigations to determine if there is potential for sediment within the western stormwater retention basin to travel off-site and affect downgradient ESAs. To accomplish this, ENSR scientists determined the discharge location for the western stormwater basin and then located the first downgradient catch basin that is part of the storm sewer system. This catch basin was inspected to determine if sediment from the western stormwater basin is being carried off-site through the storm sewer system.

2.2 Western Stormwater Retention Basin Sediment Sampling

NJDEP *Guidance for Sediment Quality Evaluations* recommends that sediment samples for lakes/lagoons/ponds be biased toward inflow/outflow areas and topographically low areas where sediments may be expected to accumulate. ENSR determined potential sediment accumulation locations during the February 2005 ecological investigation and made recommendations for sampling locations based upon this survey. Ten sediment samples taken at a depth of 0-0.5 feet below the ground surface were collected from the sediment accumulation points within the basin. Two surface water samples (one filtered and one unfiltered) were collected from the detention pond. In addition, three background samples were collected from areas within the basin where sediment did not appear to accumulate. AOC-17 (former location of Iron Foundry), which is immediately adjacent to the western stormwater retention basin, was extensively sampled during previous sampling events; therefore, no additional samples were recommended within this AOC as part of this ecological investigation. All sampling locations associated with this ecological investigation are shown on Figure 2 of Appendix D.

Sediment samples were collected for analysis of PAHs, metals, and PCBs at sampling locations EO1 through E11. Samples EO4, EO8 and E10 were chosen because they were depositional areas with potential to retain contaminants. Samples EO9, E12 and E13 were collected as background samples and analyzed for PAHs, metals, and PCBs. One sediment sample (ESW3), one surface water sample (ESW1) and one filtered water sample (ESW1dis) were collected from the detention pond and analyzed for PAHs, metals, and PCBs. The field blank results are provided in Attachment A.

Samples were analyzed for those PAHs which had exceeded criteria in previously reported soil analytical results from samples collected within the adjacent area AOC 17. Target analytes included benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Laboratory data reports are provided in Attachment B.

2.3 Risk Evaluation

Ecological risk evaluation to determine if the wetland within western stormwater retention basin has been impacted was completed using the data collected during the February 2005 ecological investigation and the February 9, 2005 sediment/surface water sampling event. Bulk sediment concentrations were compared to applicable freshwater sediment criteria. Comparison was made to the Lowest Effects Level (LEL) as a screening for potential ecological risk. The result of this comparison was used to determine if potential ecological risk existed and if additional investigation is warranted.

In addition, to determine if potential risk exists for impacts to downgradient ESAs, ENSR also evaluated the potential for chemical migration pathways to exist between the western stormwater basin and off-site ESAs.

3.0 RESULTS

3.1 Environmentally Sensitive Areas (ESAs)

According to the NJDEP letter dated December 30, 2004, the palustrine emergent wetland within the western stormwater basin is considered an ESA (see Attachment C for photographs). In addition, there are several other ESAs located within the vicinity of the site. These ESAs were identified in the July 2004 BEE and are summarized in Table 1.

3.2 Sediment and Surface Water Sampling

As part of this ecological investigation, the western stormwater retention basin area sediment sampling results were compared to ecological sediment screening criteria. Target analyte concentrations in sediment exceeding Lowest Effect Levels (LELs) were reported for cadmium, Aroclor 1260, acenaphthene, acenaphthylene, anthracene, benz(a)anthracene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene (Tables 2, 3, and 4). Target analyte concentrations exceeding Severe Effect Levels (SELs) were reported for arsenic, chromium, copper, lead, mercury, nickel, silver, zinc, and acenaphthylene (Tables 2 and 4).

As shown in Table 2, total concentrations of PAHs exceeded the Sediment LEL in 12 samples. As shown in Table 3, concentrations of Aroclor 1260 exceeded the Sediment LEL in samples EO1, EO4, EO7 and EO8. In Table 4, total concentrations of metals exceeded the Sediment LEL in all but two samples (EO6 and EO7); and there were SEL exceedences for the following constituents: arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc. Analyte concentrations exceeding the SEL were noted in 12 samples; total concentrations of metals exceeded the Sediment SEL in sample EO7 (Table 4). No LEL or SEL exists for benzo(b)fluoranthene, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1262, Aroclor 1268, antimony, beryllium, selenium, and thallium.

In addition, surface water sampling results from the western stormwater retention basin area were compared to ecological surface water screening criteria. Based on this evaluation, target analyte concentrations exceeding the LEL and the SEL were reported for copper (Table 5).

There is considerable variability between the samples collected in close proximity to each other suggesting that contaminant concentrations may vary over short distances. Sampling locations EO4, EO8, and E10 represent depositional areas, and are therefore likely to have higher accumulations of contaminants than non-depositional areas within the western retention basin. In other words, these areas likely represent worst case conditions within the retention basin. Sediment deposition and associated sediment concentrations in scour areas are likely to be below LELs. In most cases,

concentrations of PAHs were below the SEL. Analyte concentrations exceeded the SEL in sample EO3 for acenaphthylene. No constituents above the SEL were detected for PCBs. However, in most cases, concentrations of metals were above the SEL for more than one of the chemical constituents. The number of samples with analytes exceeding applicable criteria are summarized in Tables 2 through 7.

The final aspect of the February 2005 sediment and surface water investigation involved determining if sediment was being transported off-site via the discharge from the retention basin. ENSR scientists inspected the downstream catch basin and found no sediment accumulating in this catch basin. The lack of accumulated sediment suggests that the inverted discharge from the retention basin is preventing sediment, and thus contaminants bound to sediment from being carried off-site.

4.0 DISCUSSION AND CONCLUSIONS

4.1.1 Potential Exposure Pathways

The wetland located within the western stormwater retention basin is the only on-site ESA being evaluated for potential exposure pathways in this report. Stormwater runoff collected in the site's stormwater management system enters through storm drains and is conveyed through a series of pipes to the western stormwater retention basin. Some runoff may also reach the basin through overland flow. Contaminants dissolved in stormwater or bound to suspended sediment in stormwater may reach the western stormwater retention basin and the associated wetland via overland flow or through the site stormwater conveyance system.

The site storm water management system discharges to the western stormwater management basin through seven outfalls. Three outfalls are present near the northern end of the retention basin, located northeast on the opposite side from the detention pond. One outfall is located just south of the northern outfalls; two additional outfalls are located on the eastern wall towards the center of the retention basin. The remaining outfall lies at the southeast corner of the retention basin. The only potential pathway for contaminants to impact the palustrine, emergent (PEM) wetland within the retention basin is via the storm drain system along the western portion of the property (east of the basin) that discharges into the outfalls located along the northern, eastern and southern walls of the retention basin. Both metals and PAHs are common in stormwater runoff from impervious surfaces including roadways and parking areas.

Potential receptors may be exposed to contaminants by direct ingestion/uptake of sediments and overlying water, by dermal exposure to concentrations present in the sediments or sediment pore water, or by consumption of biota (plants or animals) exposed via the previous mechanisms. Sediment deposition presents a potential long-term sink for contaminants, while surface water concentrations are likely to be low where no direct continuously discharging source is present.

4.1.2 Potential Receptor Species (Flora and Fauna)

Upland vegetation was observed along the eastern wall of the retention basin, consisting mostly of invasive plants including multiflora rose (*Rosa multiflora*) and Virginia creeper (*Parthenocissus quinqeufolia*). The majority of the western stormwater retention basin is unvegetated, with the exception of the portion of the basin occupied by the PEM wetland. The wetland is dominated by purple loosestrife and cattails, with common reed also present. There was no evidence of stress observed on vegetation in the wetland or the adjacent upland.

The predominance of non-native invasive species reduces the ecological value of the wetland because these species provide little variation within the habitat and are not considered to be valuable as a resource for food or cover. White-tailed deer (*Odocoileus viginianus*), a transient organism, may use the ponded area as a potential drinking source.

The retention basin contained a small area of pooled (no flow) water (approximately 2.5 to 3 feet deep) where a layer of ice (approximately 2 inches thick) was present on the surface of the water; this area was observed at the southwest corner of the basin. In addition, the area just north of the ponded area was vegetated with emergent plants (i.e., common reed and cattails). Generally, wetlands often provide breeding and nursery sites for fish, resting areas for migratory species, and refuge from predators while decomposed plant matter (detritus) released into the water is important food for many invertebrates and fish. However, the detention pond within the western stormwater retention basin does not support fish or much other aquatic life. This area is very small and is likely subject to reduced levels of dissolved oxygen during the summer. These factors combined reduce the potential for the basin to support fish populations. Benthic communities are also not likely established in the ponded area of the retention basin. If they do exist, they are likely to be comprised of species that do not require high levels of dissolved oxygen and can survive in habitats characterized by a mucky substrate. In addition, no indication of invertebrates and/or fish were observed during this ecological investigation, during the wetland delineation, or during the site visit conducted for the BEE prepared in July 2004.

Because the western stormwater retention basin is not expected to support significant aquatic life, wildlife species that feed on fish and aquatic macroinvertebrates are not receptors for contaminants that may accumulate in tissues of aquatic life. While some of the PAHs did exceed LELs, most were below SELs. Some metals exceeded LELs, but most were above SELs. However, for the reasons discussed above, the observed contaminant concentrations are unlikely to have eliminated any organisms in the ponded area which suggests that habitat limitations are responsible for the absence of aquatic life and not the contaminant concentrations. Potential receptors which may use the ponded area for water include transient white tailed deer, turtles, rodents, and avian species. Given the historic industrial nature of the site, and the site investigation and remediation that are currently on-going at the site, there are likely better quality habitat areas located off-site. Therefore, the frequency and duration of exposure is likely to be low. In addition, as discussed in the *Foundry Area SI/RI/RAW*, the retention basin will be enclosed with a fence, thus limiting the entrance of terrestrial wildlife into the basin.

4.1.3 Estimation of Risk

Ecological risk can only occur when a complete exposure pathway exists between the contaminant source and a potential receptor. In this case, aquatic organisms (e.g., fish or benthic macroinvertebrates) were not evident in the ponded area, and hence are not likely receptors. As indicated previously, potential receptors include transient mammalian, reptilian, and avian species that

may on occasion make use of the wetland located within the western stormwater retention basin. However, the industrial nature of the site and poor habitat quality are likely to limit the frequency and duration of exposure to contaminants.

Sediment sampling in February 2005 indicated exceedance of LELs for some metals and PAHs, and in some cases exceeded the SELs for metals. Samples at each sampling location varied considerably from non-detection to concentrations above applicable criteria. Therefore it is likely that the maximum observed concentrations may overstate the actual concentrations to which organisms are exposed.

There was no evidence to suggest that discharges from the retention pond at the point of discharge represent a significant source of continuing contamination. The lack of sediment accumulation in the downstream catch basin supports this finding. Therefore, there is no potential contaminant migration pathway from the western stormwater retention basin to downstream ESAs such as the Delaware River.

4.1.4 Conclusions

The potential for future ecological risk associated with contamination in the western stormwater retention basin is considered negligible based upon the following factors:

- The absence of aquatic organisms which would be most effected by elevated concentrations of metals, PAHs, or PCBs;
- The transient nature of other potential receptors;
- The variability of concentrations observed throughout the basin;
- The plan for the retention basin to be contained within a fence completely, thus limiting access to the basin by terrestrial wildlife; and
- The pathway for on-site contamination to the ESA in the western stormwater basin will soon be eliminated due to the extensive remediation activities that will be ongoing at the site.

Because the potential for future ecological risk is considered negligible, additional ecological study of the western stormwater retention basin is not warranted.

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Plan & Profile, Storm Sewer Layout (Pursel St. to Thomas St.) Green Street Section 4, Town of Phillipsburg, Warrren County, New Jersey.

Town of Phillipsburg, Plan & Profile, Sanitary Sewer Layout, Green Street, Map dated July 1968.

Tables

Table 1: Environmental Sensitive Area Checklist

Environmentally Sensitive Area (per NJAC 7:1E-1.8)	Presence at Site or Immediately Downstream to Site (Comments)
1. Surface Waters	Lopatcong Creek is located along southeast portion of site; Lopatcong Creek flows southwesterly for approximately 2 miles before entering the Delaware River. The Delaware River is located approximately ½-mile southwest of the site. Lopatcong Creek is classified as a Category One Waterbody of the Delaware River Basin.
2. Sources of water supply	Not Present
3. Bay islands and barrier island corridors	Not Present
4. Beaches	Not Present
5. Dunes	Not Present
6. Wetlands and wetland transition areas	Wetland identified within the western stormwater retention basin as a narrow, palustrine, emergent (PEM) wetland, located at the lowest elevation in a manmade retention pond in the northwest corner of the study area. The stormwater retention basin was excavated in uplands; as such the wetlands identified in this area appear to be the result of sediment accumulation in the basin.
7. Breeding areas for forest area nesting species, colonial water birds, or aquatic furbearers	Not Present
8. Migratory stopover areas for migrant shorebirds, raptors, or passerines	Not Present
9. Wintering areas (including coastal tidal marshes and water areas), waterfowl concentration areas, and Atlantic white cedar stands	Not Present
10. Prime fishing areas	Not Present
11. Finfish migratory pathways	Lopatcong Creek is identified by NJDEP as Trout Production Stream.
12. Estuarine areas	Not Present
13. Shellfish harvesting waters	Not Present
14. Forest areas (prime and unique forestland)	Not Present
15. Federal and State-listed rare species	NJ Natural Heritage Program (NHP) indicated that there is habitat present for Eastern meadowlark (*Sturnella magna*) a state declining species. Habitat present within ¼- mile of site for two State threatened bird species: Bobolink (*Dolichonyx oryzivorus*) and Savannah sparrow (*Passerculus sandwichensis*) and for the State-endangered Vesper sparrow (*Pooecetes gramineus*). The site does not provide desirable habitat for these species.
16. Federal and State-listed wilderness areas	Not Present
17. Federal and State Wild and Scenic Rivers	Portions of the Delaware River are mapped as Scenic; however, not areas along Phillipsburg and Lopatcong. The Delaware River is located approximately ½-mile southwest of the site.

Table 2
Summary of Ecological Investigation Analytical Results:
Polycyclic Aromatic Hydrocarbons (PAHs)
Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID			E1000.0		E1100.0		E1200.0		E1300.0		EO100.0		EO200.0		EO300.0		EO400.0	
Lab ID			606238		606242		606243		606244		606228		606229		606230		606231	
Matrix			Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
Depth			0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5	
Sample Date			2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005	
Sample Time			11:55		13:05		13:10		13:25		10:10		10:15		10:20		10:25	
PAHs																		
Chemical Constituent	**CAS_RN**	**Criteria LEL**																
Acenaphthene	83-32-9	0.016	0.03	J	0.05	J	0.42	U	**0.03**	J	0.82	U	**0.07**	J	**0.11**	J	**0.02**	J
Acenaphthylene	208-96-8	0.044	0.02	J	0.04	J	0.02	J	**0.09**	J	0.02	J	**0.21**	J	**1**	J	**0.07**	J
Anthracene	120-12-7	0.22	0.09	J	0.19	J	0.02	J	0.11	J	0.03	J	**0.33**	J	**1.5**		0.08	J
Benz(a)anthracene	56-55-3	0.32	**0.77**		**0.94**		0.1		**0.64**		0.2		**0.97**		**4.1**		**0.34**	
Benzo(b)fluoranthene	205-99-2	NC	1.6		1.6		0.2		1.1		0.43		1.5		4.6		0.7	
Benzo(g,h,i)perylene	191-24-2	0.17	**1**		**0.48**		0.16	J	**0.7**		**0.2**	J	**0.32**	J	**0.97**	J	**0.22**	J
Benzo(k)fluoranthene	207-08-9	0.24	**1.4**		**1.6**		0.15		**1.2**		**0.46**		**1.9**		**6.3**		**0.73**	
Chrysene	218-01-9	0.34	**1.2**		**1.2**		0.18	J	**0.94**		**0.36**	J	**1.3**		**4.1**		**0.59**	J
Dibenz(a,h)anthracene	53-70-3	0.06	**0.34**		**0.28**		0.05		**0.22**		**0.08**	J	**0.15**		**0.46**		0.08	U
Fluoranthene	206-44-0	0.75	**1**		**1.3**		0.14	J	**0.91**		0.28	J	**1.8**		**8.1**		0.63	J
Fluorene	86-73-7	0.19	0.02	J	0.11	J	0.42	U	0.03	J	0.82	U	0.14	J	**0.44**	J	0.04	J
Indeno(1,2,3-cd)pyrene	193-39-5	0.2	**0.96**		**0.53**		0.13		**0.61**		0.19		**0.35**		**1.1**		0.19	
Naphthalene	91-20-3	0.16	0.06	J	0.06	J	0.01	J	0.04	J	0.15	J	**1.6**		**1.5**		**0.68**	J
Phenanthrene	85-01-8	0.56	0.46		**1**		0.06	J	0.42	J	0.18	J	**1.6**		**6.6**		0.51	J
Pyrene	129-00-0	0.49	**1**		**2**		0.14	J	**0.94**		0.32	J	**2.4**		**14**		**1.1**	
Total PAHs*	--	4	**10**		**11**		2		**8**		**5**		**15**		**55**		**6**	

NOTES:

All results are reported in mg/kg,dw = milligrams per kilogram, dry weight.

CAS-RN = Chemical Abstracts Service Registry Number

J = constituent was detected above the method detection limit but below the quantitation limit.

U = constituent was not detected above the specified method detection limit.

LEL = Lowest Effects Level; a freshwater sediment screening criteria (Persaud et al., 1993).

Background samples include: E12, E13 and EO9.

Bold indicates that the analyte concentration exceeds the LEL.

* Totals exceeding criteria LEL are in bold.

Table 2
Summary of Ecological Investigation Analytical Results:
Polycyclic Aromatic Hydrocarbons (PAHs)
Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID			**EO500.0**		**EO500.D**		**EO600.0**		**EO700.0**		**EO800.0**		**EO900.0**		**ESW30.0**	
Lab ID			606232		606233		606234		606235		606236		606237		606241	
Matrix			Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
Depth			0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5	
Sample Date			2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005	
Sample Time			10:50		10:50		10:50		11:05		11:15		11:20		12:45	
PAHs																
Chemical Constituent	**CAS_RN**	**Criteria LEL**														
Acenaphthene	83-32-9	0.016	**0.06**	J	**0.11**	J	**0.02**	J	**0.04**	J	**0.02**	J	0.43	U	**0.08**	J
Acenaphthylene	208-96-8	0.044	**0.05**	J	**0.1**	J	**0.1**	J	**0.08**	J	0.04	J	0.43	U	0.86	U
Anthracene	120-12-7	0.22	0.14	J	**0.25**	J	**0.27**	J	0.15	J	0.06	J	0.02	J	**0.32**	J
Benz(a)anthracene	56-55-3	0.32	**1.5**		**1.8**		**1.1**		**0.71**		0.27		0.13		**6.6**	
Benzo(b)fluoranthene	205-99-2	NC	3.9		4.4		0.97		0.95		0.44		0.22		20	
Benzo(g,h,i)perylene	191-24-2	0.17	**1**		**0.88**	J	**0.74**		**0.45**	J	**0.2**	J	**0.32**	J	**5.9**	
Benzo(k)fluoranthene	207-08-9	0.24	**3.2**		**4.8**		**1.2**		**1**		**0.44**		0.2		**11**	
Chrysene	218-01-9	0.34	**2.3**		**2.9**		**1.5**		**1**	J	**0.4**	J	0.21	J	**11**	
Dibenz(a,h)anthracene	53-70-3	0.06	**0.39**		**0.36**		**0.22**		**0.18**		**0.07**	J	**0.07**		**3.1**	
Fluoranthene	206-44-0	0.75	**2.2**		**2.4**		**2.8**		**1.2**	J	0.44	J	0.16	J	**6.7**	
Fluorene	86-73-7	0.19	0.04	J	0.09	J	0.05	J	0.05	J	0.04	J	0.43	U	0.04	J
Indeno(1,2,3-cd)pyrene	193-39-5	0.2	**1**		**0.89**		**0.61**		**0.45**		0.19		**0.23**		**6.5**	
Naphthalene	91-20-3	0.16	**0.34**	J	**1.3**		0.03	J	**0.23**	J	0.07	J	0.01	J	0.15	J
Phenanthrene	85-01-8	0.56	**0.9**		**1.4**		**1.3**		**0.74**	J	0.27	J	0.08	J	**2.7**	
Pyrene	129-00-0	0.49	**2.5**		**3.4**		**2.5**		**1.4**	J	0.48	J	0.17	J	**5.5**	
Total PAHs*	--	4	**20**		**25**		**13**		**9**		3		3		**80**	

NOTES:

All results are reported in mg/kg,dw = milligrams per kilogram, dry weight.

CAS-RN = Chemical Abstracts Service Registry Number

J = constituent was detected above the method detection limit but below the quantitation limit.

U = constituent was not detected above the specified method detection limit.

LEL = Lowest Effects Level; a freshwater sediment screening criteria (Persaud et al., 1993).

Background samples include: E12, E13 and EO9.

Bold indicates that the analyte concentration exceeds the LEL.

* Totals exceeding criteria LEL are in bold.

Table 3
Summary of Ecological Investigation Analytical Results:
Polychlorinated Biphenyls (PCBs)
Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID			**E1000.0**		**E1100.0**		**E1200.0**		**E1300.0**		**EO100.0**		**EO200.0**		**EO300.0**		**EO400.0**	
Lab ID			606238		606242		606243		606244		606228		606229		606230		606231	
Matrix			Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
Depth			0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5	
Sample Date			2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005	
Sample Time			11:55		13:05		13:10		13:25		10:10		10:15		10:20		10:25	
PCBs	**CAS_RN**	**Criteria LEL**																
Aroclor-1016	12674-11-2	0.007	(0.09)	U	(0.08)	U	(0.08)	U	(0.09)	U	(0.08)	U	(0.12)	U	(0.1)	U	(0.08)	U
Aroclor-1221	11104-28-2	NC	(0.09)	U	(0.08)	U	(0.08)	U	(0.09)	U	(0.08)	U	(0.12)	U	(0.1)	U	(0.08)	U
Aroclor-1232	11141-16-5	NC	(0.09)	U	(0.08)	U	(0.08)	U	(0.09)	U	(0.08)	U	(0.12)	U	(0.1)	U	(0.08)	U
Aroclor-1242	53469-21-9	NC	(0.09)	U	(0.08)	U	(0.08)	U	(0.09)	U	(0.08)	U	(0.12)	U	(0.1)	U	(0.08)	U
Aroclor-1248	12672-29-6	0.03	(0.09)	U	(0.08)	U	(0.08)	U	(0.09)	U	(0.08)	U	(0.12)	U	(0.1)	U	(0.08)	U
Aroclor-1254	11097-69-1	0.06	(0.09)	U	(0.08)	U	(0.08)	U	(0.09)	U	(0.08)	U	(0.12)	U	(0.1)	U	(0.08)	U
Aroclor-1260	11096-82-5	0.005	(0.09)	U	(0.08)	U	(0.08)	U	(0.09)	U	**0.12**		(0.12)	U	(0.1)	U	**0.19**	
Aroclor-1262	37324-23-5	NC	(0.09)	U	(0.08)	U	(0.08)	U	(0.09)	U	(0.08)	U	(0.12)	U	(0.1)	U	(0.08)	U
Aroclor-1268	11100-14-4	NC	(0.09)	U	(0.08)	U	(0.08)	U	(0.09)	U	(0.08)	U	(0.12)	U	(0.1)	U	(0.08)	U
Total PCBs	--	0.07	ND		ND		ND		ND		**0.12**		ND		ND		**0.19**	

Notes:

All results are reported in mg/kg.

CAS-RN = Chemical Abstracts Service Registry Number

LEL = Lowest Effects Level (Persaud et al. 1996)

U = constituent was not detected above the specified method detection limit.

NC = No Criteria

Background samples include: E12, E13 and EO9.

Bold indicates that the analyte concentration exceeds the LEL.

Table 3
Summary of Ecological Investigation Analytical Results:
Polychlorinated Biphenyls (PCBs)
Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID			**EO500.0**		**EO500.D**		**EO600.0**		**EO700.0**		**EO800.0**		**EO900.0**		**ESW30.0**	
Lab ID			606232		606233		606234		606235		606236		606237		606241	
Matrix			Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
Depth			0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5	
Sample Date			2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005	
Sample Time			10:50		10:50		10:50		11:05		11:15		11:20		12:45	
PCBs	**CAS_RN**	**Criteria LEL**														
Aroclor-1016	12674-11-2	0.007	(0.09)	U	(0.11)	U	(0.09)	U	(0.18)	U	(0.1)	U	(0.09)	U	(0.09)	U
Aroclor-1221	11104-28-2	NC	(0.09)	U	(0.11)	U	(0.09)	U	(0.18)	U	(0.1)	U	(0.09)	U	(0.09)	U
Aroclor-1232	11141-16-5	NC	(0.09)	U	(0.11)	U	(0.09)	U	(0.18)	U	(0.1)	U	(0.09)	U	(0.09)	U
Aroclor-1242	53469-21-9	NC	(0.09)	U	(0.11)	U	(0.09)	U	(0.18)	U	(0.1)	U	(0.09)	U	(0.09)	U
Aroclor-1248	12672-29-6	0.03	(0.09)	U	(0.11)	U	(0.09)	U	(0.18)	U	(0.1)	U	(0.09)	U	(0.09)	U
Aroclor-1254	11097-69-1	0.06	(0.09)	U	(0.11)	U	(0.09)	U	(0.18)	U	(0.1)	U	(0.09)	U	(0.09)	U
Aroclor-1260	11096-82-5	0.005	(0.09)	U	(0.11)	U	(0.09)	U	**0.7**		**0.53**		(0.09)	U	(0.09)	U
Aroclor-1262	37324-23-5	NC	(0.09)	U	(0.11)	U	(0.09)	U	(0.18)	U	(0.1)	U	(0.09)	U	(0.09)	U
Aroclor-1268	11100-14-4	NC	(0.09)	U	(0.11)	U	(0.09)	U	(0.18)	U	(0.1)	U	(0.09)	U	(0.09)	U
Total PCBs	--	0.07	ND		ND		ND		**0.7**		**0.53**		ND		ND	

Notes:

All results are reported in mg/kg.

CAS-RN = Chemical Abstracts Service Registry Number

LEL = Lowest Effects Level (Persaud et al. 1996)

U = constituent was not detected above the specified method detection limit.

NC = No Criteria

Background samples include: E12, E13 and EO9.

Bold indicates that the analyte concentration exceeds the LEL.

Table 4
Summary of Ecological Investigation Analytical Results:
Metals
Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID			**E1000.0**		**E1100.0**		**E1200.0**		**E1300.0**		**EO100.0**		**EO200.0**		**EO300.0**		**EO400.0**	
Lab ID			606238		606242		606243		606244		606228		606229		606230		606231	
Matrix			Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
Depth			0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5	
Sample Date			2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005	
Sample Time			11:55		13:05		13:10		13:25		10:10		10:15		10:20		10:25	
Metals	**CAS_RN**	**Criteria LEL**																
Antimony	7440-36-0	NC	(1.1)	U	(0.9)	U	(0.98)	U	(0.9)	U	(0.96)	U	(1.4)	U	2.2	B	1	B
Arsenic	7440-38-2	6	**14.5**		**6.4**		**27.1**		**54.8**		**10.5**		**6.1**		**23**		5	
Beryllium	7440-41-7	NC	2.7		0.27	B	1.1		0.94		0.92		0.41	B	0.34	B	0.25	B
Cadmium	7440-43-9	0.6	**5.1**		0.29	B	(0.1)	U	0.47	B	0.47	B	**1.3**	B	**0.81**	B	0.34	B
Chromium	7440-47-3	26	**153**		13.9		**43.4**		**34.4**		**194**		**338**		**591**		**96.5**	
Copper	7440-50-8	16	**300**		**674**		**54.5**		**131**		**224**		**536**		**798**		**125**	
Lead	7439-92-1	31	**52.4**		**59.2**		26.3		**58.2**		**72.7**		**176**		**212**		**38.1**	
Mercury	7439-97-6	0.2	**0.47**		0.1		0.08		0.18		0.1		0.15		0.07		0.05	
Nickel	7440-02-0	16	**46.3**		**23.7**		**23.7**		**23.5**		**156**		**284**		**391**		**69.4**	
Selenium	7782-49-2	NC	(1.3)	U	(1.1)	U	(1.2)	U	(1.1)	U	(1.2)	U	(1.7)	U	(1.4)	U	(1.2)	U
Silver	7440-22-4	1	**8.1**		0.33	B	(0.2)	U	**1.7**	B	(0.2)	U	**1.3**	B	**5.9**		(0.2)	U
Thallium	7440-28-0	NC	(1.2)	U	(1)	U	(1.1)	U	(1)	U	(1.1)	U	(1.6)	U	(1.3)	U	(1.1)	U
Zinc	7440-66-6	120	**215**		**248**		**126**		**169**		**435**		**584**		**686**		**313**	

NOTES:

All results are reported in mg/kg,dw = milligrams per kilogram, dry weight.

CAS-RN = Chemical Abstracts Service Registry Number

B = constituent was found in the laboratory blank, indicating potential laboratory contamination of the site sample(s).

U = constituent was not detected above the specified method detection limit; concentration is reported as equal to the reporting detection limit.

LEL = Lowest Effects Level; a freshwater sediment screening criteria (Persaud et al., 1993).

NC = No Criteria

Background samples include: E12, E13 and EO9.

Bold indicates that the analyte concentration exceeds the LEL.

Table 4
Summary of Ecological Investigation Analytical Results:
Metals
Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID			**EO500.0**		**EO500.D**		**EO600.0**		**EO700.0**		**EO800.0**		**EO900.0**		**ESW30.0**	
Lab ID			606232		606233		606234		606235		606236		606237		606241	
Matrix			Sediment		Sediment		Sediment		Sediment		Sediment		Sediment		Sediment	
Depth			0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5		0-0.5	
Sample Date			2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005		2/9/2005	
Sample Time			10:50		10:50		10:50		11:05		11:15		11:20		12:45	
Metals	**CAS_RN**	**Criteria LEL**														
Antimony	7440-36-0	NC	(0.78)	U	(1.2)	U	(0.91)	U	(2.1)	U	1.5	B	(1)	U	(0.92)	U
Arsenic	7440-38-2	6	5.2		**6.7**		**6.4**		**13.7**		**12.4**		**11.8**		3.9	
Beryllium	7440-41-7	NC	0.4		0.7		0.43	B	0.65	B	0.47	B	2.3		0.3	B
Cadmium	7440-43-9	0.6	**0.71**	B	**1.1**	B	(0.09)	U	**4.8**		**1.3**	B	(0.1)	U	**1.1**	B
Chromium	7440-47-3	26	**172**		**172**		11.6		**266**		**127**		14.7		**33.5**	
Copper	7440-50-8	16	**1290**		**648**		**45.8**		**1080**		**632**		**33.1**		**238**	
Lead	7439-92-1	31	**68.2**		**93.1**		20.1		**293**		**165**		17		**30.8**	
Mercury	7439-97-6	0.2	0.18		0.19		0.08		**2.7**		**0.4**		0.1		0.21	
Nickel	7440-02-0	16	**192**		**265**		12.1		**71**		**54.3**		**32.8**		15.3	
Selenium	7782-49-2	NC	(0.94)	U	(1.5)	U	(1.1)	U	(6.3)	U	(1.5)	U	(1.2)	U	(1.1)	U
Silver	7440-22-4	1	0.71	B	**1.2**	B	(0.19)	U	**10.5**		**2.2**	B	0.24	B	**3**	
Thallium	7440-28-0	NC	(0.88)	U	(1.4)	U	(1)	U	(1.2)	U	(1.4)	U	(1.1)	U	(1)	U
Zinc	7440-66-6	120	**232**		**305**		70.1		**1270**		**600**		**132**		100	

NOTES:

All results are reported in mg/kg,dw = milligrams per kilogram, dry weight.

CAS-RN = Chemical Abstracts Service Registry Number

B = constituent was found in the laboratory blank, indicating potential laboratory contamination of the site sample(s).

U = constituent was not detected above the specified method detection limit; concentration is reported as equal to the reporting detection limit.

LEL = Lowest Effects Level; a freshwater sediment screening criteria (Persaud et al., 1993).

NC = No Criteria

Background samples include: E12, E13 and EO9.

Bold indicates that the analyte concentration exceeds the LEL.

Table 5
Summary of Analytical Results for Detention Pond Surface Water:
Metals
Fomer Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID				**ESW1_Dis**		**ESW10.0**	
Lab ID				606240		606239	
Matrix				Surface Water		Surface Water	
Sample Date				2/9/2005		2/9/2005	
Sample Time				12:30		12:20	
		Benchmarks[1]					
	CAS_RN	**acute**	**chronic**				
Antimony	7440-36-0	180	30	(3.90)	U	(3.50)	U
Arsenic	7440-38-2	340	150	(3.50)	U	(3.50)	U
Beryllium	7440-41-7	35	0.66	(0.10)	U	(0.10)	U
Cadmium	7440-43-9	2	0.25	(0.40)	U	(0.40)	U
Chromium	7440-47-3	570	74	(2.80)	U	(2.80)	U
Copper	7440-50-8	13	9	**13**		**15.8**	
Lead	7439-92-1	65	2.5	(2.20)	U	(2.20)	U
Mercury	7439-97-6	1.4	0.77	(0.10)	U	(0.10)	U
Nickel	7440-02-0	470	52	(3.90)	U	41.60	
Selenium	7782-49-2	NA	5	(4.70)	U	(4.70)	U
Silver	7440-22-4	3.2	0.36	(0.80)	U	(0.80)	U
Thallium	7440-28-0	110	12	(4.40)	U	(4.40)	U
Zinc	7440-66-6	120	120	30.3		19.6	

NOTES:

All results are reported in micrograms per liter (μg/L).

CAS_RN = Chemical Abstracts Service Registry Number

[1] Source: Suter and Tsao, 1996, *Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota*

U = constituent was not detected above the specified method detection limit.

NAWQC for several metals are based on 100 mg/L hardness.

NA = Not available or not applicable

Bold indicates that the concentration exceeds the benchmark type.

Table 6
Summary of Analytical Results for Detention Pond Surface Water:
Polychlorinated Biphenyls (PCBs)
Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID				**ESW10.0**	
Lab ID				606239	
Matrix				Surface Water	
Sample Date				2/9/2005	
Sample Time				12:20	
		Benchmarks[1]			
	CAS_RN	**acute**	**chronic**		
Aroclor-1016	12674-11-2	NA	NA	(0.2)	U
Aroclor-1221	11104-28-2	5	0.28	(0.3)	U
Aroclor-1232	11141-16-5	10	0.58	(0.3)	U
Aroclor-1242	53469-21-9	1.2	0.053	(0.2)	U
Aroclor-1248	12672-29-6	1.4	0.081	(0.3)	U
Aroclor-1254	11097-69-1	0.6	0.033	(0.2)	U
Aroclor-1260	11096-82-5	1700	94	(0.3)	U
Aroclor-1262	37324-23-5	NA	NA	(0.3)	U
Aroclor-1268	11100-14-4	NA	NA	(0.3)	U
Total PCBs	--	NA	0.014		

NOTES:

All results are reported in micrograms per liter (μg/L).

CAS_RN = Chemical Abstracts Service Registry Number

[1] Source: Suter and Tsao, 1996, *Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota*

U = constituent was not detected above the specified method detection limit.

NA = Not available or not applicable

Table 7
Summary of Analytical Results for Detention Pond Surface Water:
Polycyclic Aromatic Hydrocarbons (PAHs)
Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID				**ESW10.0**	
Lab ID				606239	
Matrix				Surface Water	
Sample Date				2/9/2005	
Sample Time				12:20	
		Benchmarks[1]			
	CAS_RN	**acute**	**chronic**		
Acenaphthene	83-32-9	NA	NA	(0.09)	U
Acenaphthylene	208-96-8	NA	NA	(0.07)	U
Anthracene	120-12-7	13	0.73	(0.09)	U
Benz(a)anthracene	56-55-3	0.49	0.027	(0.09)	U
Benzo(b)fluoranthene	205-99-2	NA	NA	(0.09)	U
Benzo(g,h,i)perylene	191-24-2	NA	NA	(0.07)	U
Benzo(k)fluoranthene	207-08-9	NA	NA	(0.06)	U
Chrysene	218-01-9	NA	NA	(0.09)	U
Dibenz(a,h)anthracene	53-70-3	NA	NA	(0.1)	U
Fluoranthene	206-44-0	NA	NA	(0.07)	U
Fluorene	86-73-7	70	3.9	(0.1)	U
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	(0.09)	U
Naphthalene	91-20-3	190	12	(0.04)	U
Phenanthrene	85-01-8	37.1	3.23	(0.09)	U
Pyrene	129-00-0	NA	NA	(0.07)	U
Total PAHs	--	--			

NOTES:

All results are reported in micrograms per liter (μg/L).

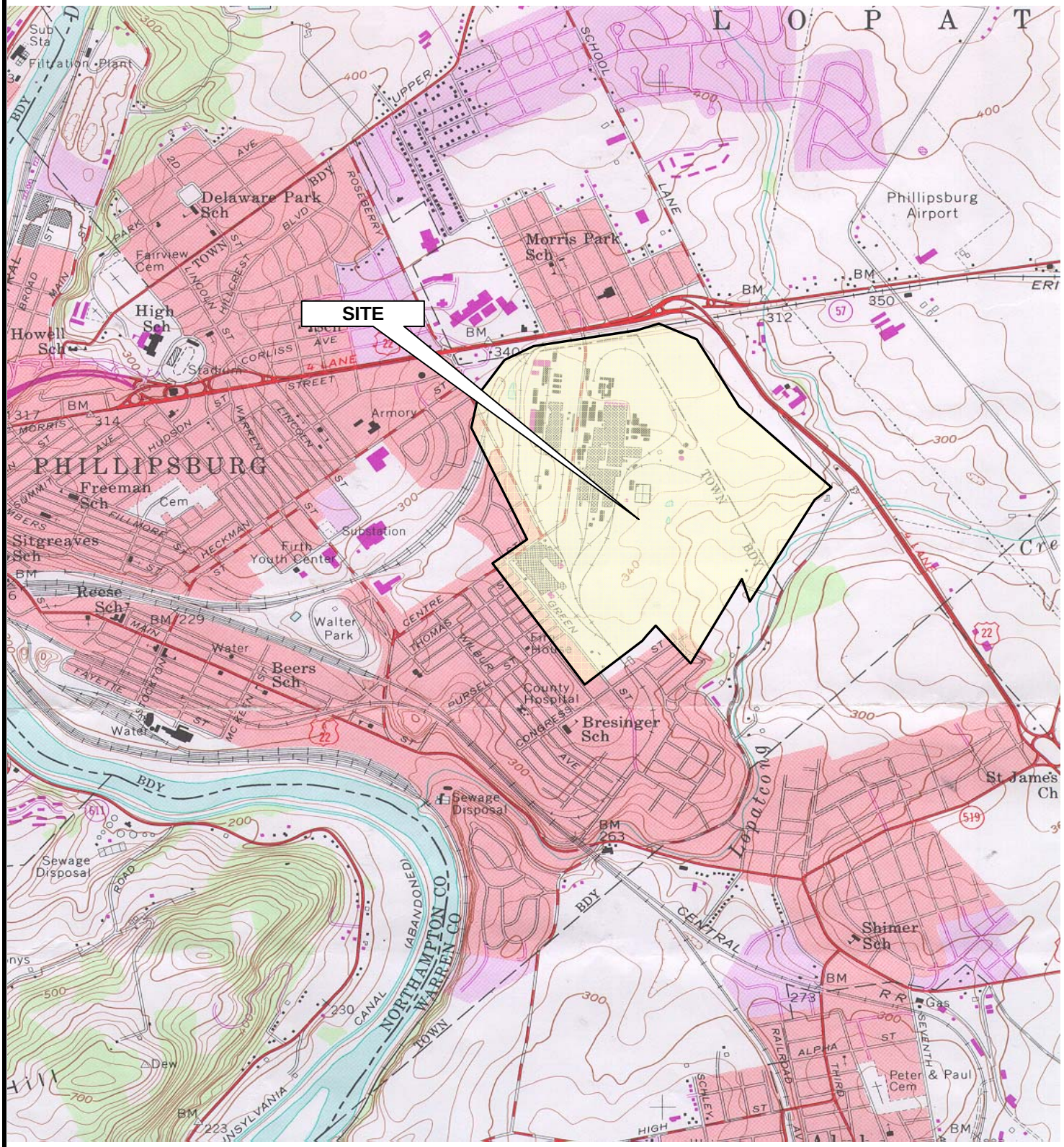
CAS_RN = Chemical Abstracts Service Registry Number

[1] Source: Suter and Tsao, 1996, *Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota*

U = constituent was not detected above the specified method detection limit.

NA = Not available or not applicable

Figures

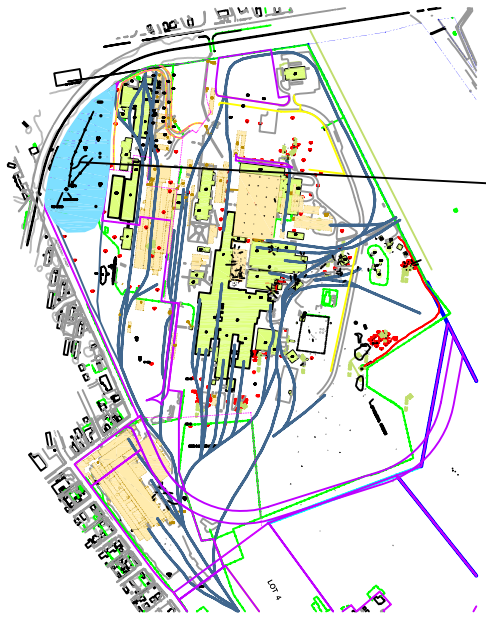


Source: USGS 7.5' Topographic Quadrangle - Easton, NJ-PA 1954 - Photorevised 1981	Client: **Ingersoll Rand Company** Design/Review: GM/CV Scale: 1:24,000 Date: 06/03/05	Figure Title: **FIGURE 1** **USGS Site Location Map** Former Ingersoll-Rand - Phillipsburg, New Jersey Project No.: 03710-167	ENSR INTERNATIONAL

J:\Project\Ingersoll Rand\03710-167\ACO\BEE Investigation

LOCATION REFERENCE MAP

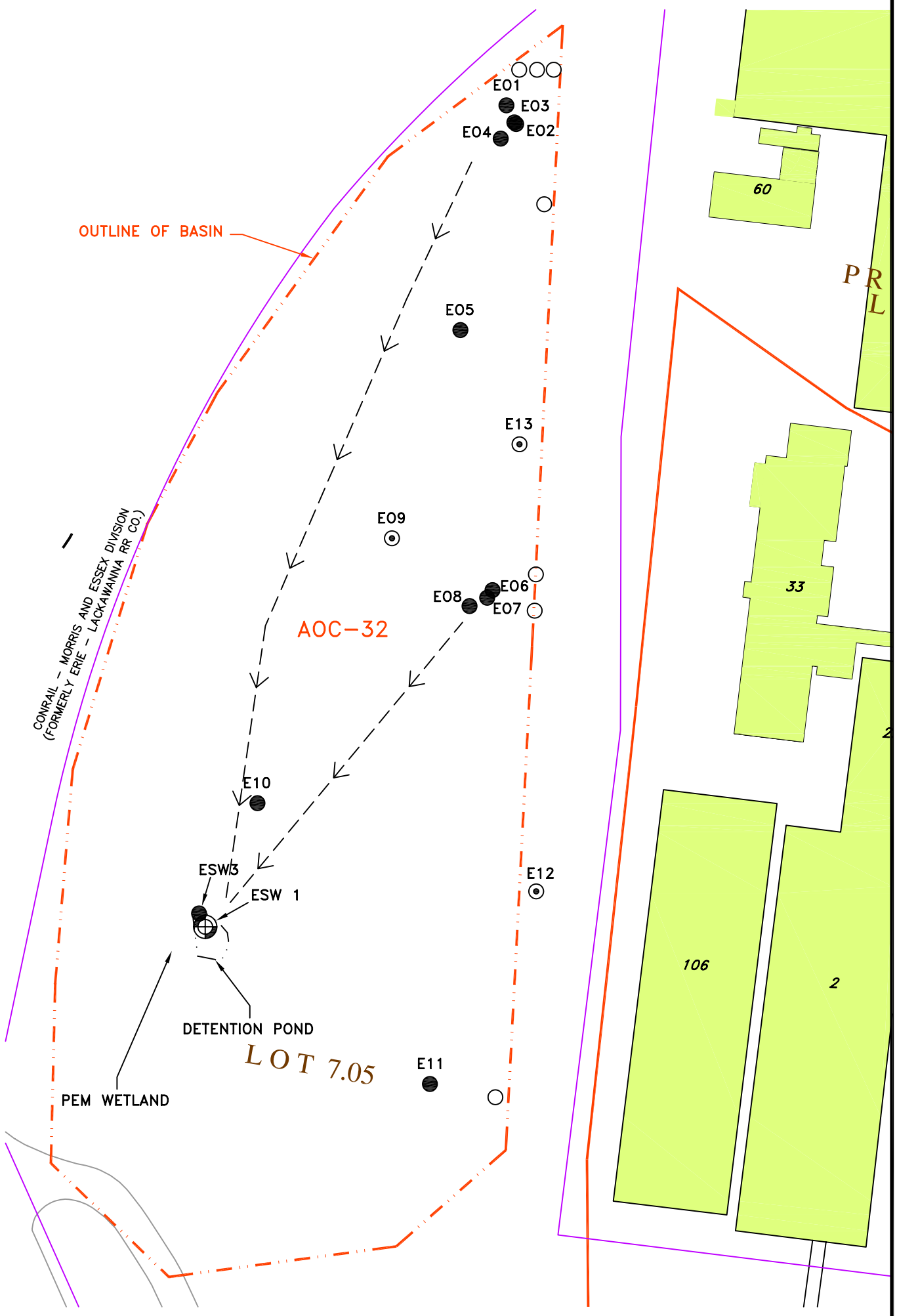
AREA OF FOCUS



1,500 750 0 1,500

Scale in Feet

NORTH



Legend

- SEDIMENT SAMPLE LOCATION
- BACKGROUND SEDIMENT SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- OUTFALLS
- DRAINAGE PATHS

100 50 0 100

Scale in Feet

Notes

ESW1-SURFACE WATER SAMPLE COLLECTED FROM PONDED AREA AT BASIN

ESW3-SEDIMENT SAMPLE COLLECTED FROM PONDED AREA AT BASIN

J:\Project\Ingersoll Rand\03710-167\CADD\North Foundry Cadd\Bee SS Ret Basin(2).dwg

SHEET NUMBER:	FIGURE NUMBER:
1 of 1	2

ECOLOGICAL INVESTIGATION
SAMPLE LOCATION MAP
STORMWATER RETENTION BASIN
FORMER INGERSOLL RAND FACILITY
PHILLIPSBURG, NEW JERSEY

SCALE:	DATE:	PROJECT NUMBER:
AS SHOWN	07/15/05	03710-167

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DESIGNED BY:	REVISIONS			
GMat	NO.:	DESCRIPTION:	DATE:	BY:
DRAWN BY:				
/JK/lc				
CHECKED BY:				
APPROVED BY:				

Attachments

Attachment A

Summary of Field Blank Results

Attachment A
Summary of Field Blank Results for Western Retention Basin: PAHs, PCBs and Metals
Former Ingersoll-Rand Facility
Phillipsburg, New Jersey

Field ID		**F020905**	
Lab ID		606245	
Sample Date		2/9/2005	
Sample Time		10:30	
PAHs			
Chemical Constituent	**CAS_RN**		
Acenaphthene	83-32-9	0.09	U
Acenaphthylene	208-96-8	0.07	U
Anthracene	120-12-7	0.09	U
Benz(a)anthracene	56-55-3	0.09	U
Benzo(b)fluoranthene	205-99-2	0.09	U
Benzo(g,h,i)perylene	191-24-2	0.07	U
Benzo(k)fluoranthene	207-08-9	0.06	U
Chrysene	218-01-9	0.09	U
Dibenz(a,h)anthracene	53-70-3	0.1	U
Fluoranthene	206-44-0	0.07	U
Fluorene	86-73-7	0.1	U
Indeno(1,2,3-cd)pyrene	193-39-5	0.09	U
Naphthalene	91-20-3	0.04	U
Phenanthrene	85-01-8	0.09	U
Pyrene	129-00-0	0.07	U
Total PAHs	--		
Polychlorinated Biphenyls (PCBs)			
Aroclor-1016	12674-11-2	(0.2)	U
Aroclor-1221	11104-28-2	(0.3)	U
Aroclor-1232	11141-16-5	(0.3)	U
Aroclor-1242	53469-21-9	(0.2)	U
Aroclor-1248	12672-29-6	(0.3)	U
Aroclor-1254	11097-69-1	(0.2)	U
Aroclor-1260	11096-82-5	(0.3)	U
Aroclor-1262	37324-23-5	(0.3)	U
Aroclor-1268	11100-14-4	(0.3)	U
Total PCBs	--		
Metals			
Antimony	7440-36-0	(3.9)	U
Arsenic	7440-38-2	(3.5)	U
Beryllium	7440-41-7	(0.1)	U
Cadmium	7440-43-9	(0.4)	U
Chromium	7440-47-3	(2.8)	U
Copper	7440-50-8	(3.1)	U
Lead	7439-92-1	(2.2)	U
Mercury	7439-97-6	(0.1)	U
Nickel	7440-02-0	(3.9)	U
Selenium	7782-49-2	(4.7)	U
Silver	7440-22-4	(0.8)	U
Thallium	7440-28-0	(4.4)	U
Zinc	7440-66-6	(5.8)	U

NOTES:

CAS_RN = Chemical Abstracts Service Registry Number

U = constituent was not detected above the specified method detection limit.

Attachment B

Laboratory Data Report

(see STL Lab Number T104)

Attachment C

Photographs

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
1	2/3/05

Direction of Photo:

Looking North

Description:

NW corner of basin: View of western most pipe.

Photo No.	Date:
2	2/3/05

Direction of Photo:

Looking North

Description:

NW Corner of basin: View of mat liner (center of photograph)

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
3	2/3/05

Direction of Photo:

Looking North

Description:

NW Corner of basin: View of eastern pipes.

Photo No.	Date:
4	2/3/05

Direction of Photo:

Looking North

Description:

NW Corner of basin: View of the three previously identified pipes from further away. Note: there is a 13 foot distance between these pipes.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
5	2/3/05

Direction of Photo:

Looking West

Description:

NW Corner of basin: View of pipes located along the slope. Foundry is located in the background.

Photo No.	Date:
6	2/3/05

Direction of Photo:

Looking East

Description:

NW Corner of basin: View looking at the first pipe encountered along the east wall of the basin.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
7	2/3/05

Direction of Photo:

Looking West

Description:

NW Corner of basin: View of the up rap down to basin floor.

Photo No.	Date:
8	2/3/05

Direction of Photo:

Looking East

Description:

South from previous pipe on eastern wall (photo 6): View of the 16" diameter pipe north of the second pipe.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
9	2/3/05

Direction of Photo:

Looking West

Description:

South from pipe four on eastern wall:
View of drainage swale to basin.

Photo No.	Date:
10	2/3/05

Direction of Photo:

Looking Southeast

Description:

South from pipe four on eastern wall:
View of second pipe further to the South. Connected to basin wall.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
11	2/3/05

Direction of Photo:

Looking East

Description:

South on eastern wall: View of both pipes. Pipe five and six located together.

Photo No.	Date:
12	2/3/05

Direction of Photo:

Looking West

Description:

South on eastern wall: View looking down towards the basin.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
13	2/3/05

Direction of Photo:

Looking West

Description:

Pipes five and six covered with riprap and cobble outside pipe. Large stones line the way to the basin.

Photo No.	Date:
14	2/3/05

Direction of Photo:

Looking Southwest

Description:

View of pipe at southwest corner of basin. The ponded area in center of photograph is frozen.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
15	2/3/05

Direction of Photo:

Looking Southwest

Description:

View of pipe from southwest corner of basin.

Photo No.	Date:
16	2/3/05

Direction of Photo:

Looking North

Description:

View of the western wall of basin. Disturbed /modified wetlands depicted in foreground.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
17	2/3/05

Direction of Photo:

Looking East

Description:

Seventh pipe along southeast corner of basin. Note: pipe is 36" in diameter. Concrete/large rock in vicinity.

Photo No.	Date:
18	2/3/05

Direction of Photo:

Looking West

Description:

View of the basin and disturbed vegetation including common reed (*Phragmites australis*).

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
19	2/3/05

Direction of Photo:

Looking West

Description:

View showing swale leading from pipe drains into the ponded area.

Photo No.	Date:
20	2/3/05

Direction of Photo:

Looking East

Description:

View of basin from western side looking east at the eastern wall of the basin (pipe four is barely visible). Foundry pictured in background.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
21	2/3/05

Direction of Photo:

Looking East

Description:

Another view of pipe four taken from west side of basin looking east.

Photo No.	Date:
22	2/3/05

Direction of Photo:

Looking East

Description:

View looking east across basin towards pipes five and six (further South from previous view).

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
23	2/3/05

Direction of Photo:

Looking East.

Description:

Looking east across basin towards location of pipes five and six.

Photo No.	Date:
24	2/3/05

Direction of Photo:

Looking West

Description:

View of basin from the southern side looking north across the west ponded area.

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
Ingersoll Rand	Phillipsburg, New Jersey	03710-167-EIR

Photo No.	Date:
25	2/3/05

Direction of Photo:

Looking North

Description:

View looking northwest across basin.

Photo No.	Date:
26	2/3/05

Direction of Photo:

West side of basin

Description:

Standing above pipe seven looking down towards ponded area.